



Gustin Solar

Harrisville Township

Exhibit E

Solar PV Station Emergency Response Plan

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Purpose

This document summarizes Consumers Energy’s utility scale solar PV station emergency response policy and standards. It is not intended to be used as specific procedures or work instructions.

Scope

The scope of this emergency response plan will include Environmental, Health, Safety & Security of utility scale solar PV stations. The intended scope of this document is post-commercial operations date (COD).

Consumers Energy operates and maintains all utility scale PV generating stations of which it owns. The operation and maintenance of these assets will be conducted by union Solar/Battery Technicians who are trained in an 18 month earn-while-you-learn program that provides individuals with specialized skills that are essential to ensure high availability and capacity factor of the assets they support.

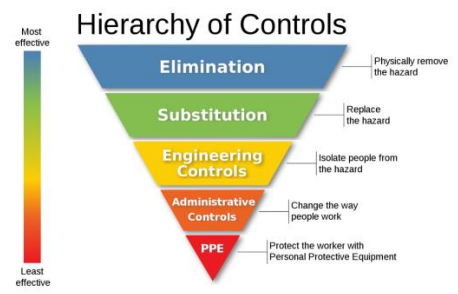
Vision & Policy

Vision: Consumers Energy Generation Operations is recognized as a world leading clean energy supplier. Our innovative and empowered team achieves industry defining outcomes that power Michigan safely, reliably, and affordably.

Policy: Safety is foremost at Consumers Energy, starting with public safety as detailed in this Solar PV Station Emergency Response Plan. On going operations and maintenance of the site will be conducted safely by Consumers Energy and its agents with all such activities being conducted with the utmost care of the environment. Physical and cyber security shall also be paramount in ensuring public safety as well as the safe and reliable operation of each asset and components there-of.

Environmental, Health, Safety & Security (EHSS)

The generation, transmission and distribution of electricity included inherit hazards and risks that must be mitigated by robust hazard identification and controls including:



EHSS hazards and risks are first eliminated and/or mitigated through facility design. Written policies, standards and work-instructions further mitigate EHSS hazards and risks and are required for every potentially hazardous situation at every Consumers Energy site. Each is informed by all relevant governmental and industry standards, codes, etc. as a minimum. Personal protective equipment is required commensurate with each situation and task, thereby providing a further barrier of protection.

EHSS communications and reporting each follow internal and external stakeholder standards and are to be conducted well within required timeframes. Security encompasses both physical security and cyber security as to ensure that wanderers and/or trespassers are kept safely outside of physical and/or cyber boundaries.

Public Safety

Access to the Solar PV site is limited to trained staff and maintenance personnel only. Solar panel arrays and the Substation are surrounded by fence per requirements of the National Electric Safety Code (NESC). Additionally, fencing around the Substation includes an additional foot of barbed wire along the top of the fence. Access to the Solar PV site occurs through gates in the fence that are secured with a padlock, and only Operator personnel have access.

Emergency Responder Training and Orientation

Appropriate training of first responders is key to their understanding of the hazards that are present within the Solar PV site area and to mitigate potential risks to their life during a response. As such, first responders that could be dispatched to the site in the event of an emergency will be trained prior to commencement of operation and on a periodic basis thereafter. The Supervisor will work with Fire and other local Departments, as well as county and state safety officials, as appropriate, to provide biennial site-specific orientation to emergency response leadership and their assigned staff.

Emergency Response Overview

Table 1, shown below, provides an overview of Company’s Emergency Management documentation and the relationship to this document.

Emergency Management Program Documents	Emergency Management Policy	A corporate policy providing the authority to maintain Company-wide emergency response plans and emergency management core capabilities.
	Emergency Management Strategy	A plan outlining the Company’s adopted standards, capability goals, and strategic direction for emergency management activities, including the development and integration of all plans, policies, and procedures necessary to build, sustain, and improve the Company’s capability to prepare for, respond to, and recover from threats resulting from <i>All-Hazards</i> .
Company-Wide Response Plans	Crisis Management Plan (Officer in Charge/Crisis Management Team)	A plan that outlines the responsibilities of an “Officer in Charge” and Crisis Management Team during formal ICS activations.
	All-Hazards Emergency Operations Plan (EOP)	A plan providing standardized terminology, response process, and response organizations to prepare for and respond to any <i>incident</i> involving Consumers Energy’s facilities or the communities served. The EOP also establishes guidelines to determine the appropriate level of response and clarifies the information sharing process to define

		incident status, incident objectives, and resource requirements.
	Crisis Communications Plan	A plan providing a scalable, company-wide process for assuring an appropriate communications response is enacted during any incident that invokes a media response, activates the EOP, threatens the Company’s reputation, or requires immediate communication to internal or external stakeholders. The CCP provides a response organization, key responsibilities, and a process for providing consistent communications.
	Master Business Continuity Plan	A plan for mitigating the impact to the Company during a continuity event that impacts Company operations. The Master <i>Business Continuity</i> Plan ensures viable strategies have been established to continue or quickly recover critical business processes. This plan utilizes the Company’s response process and response organization outlined in the All-Hazards <i>Emergency Operations Plan (EOP)</i> .

Organization-Specific Plan	Generation Operations Emergency Response Procedure	A procedure providing the steps to be taken during and after any incident involving one or more Consumers Energy Electric Generation facilities. Aligns with company-wide response plans.
Site-Specific Annexes	Example: Blackman Solar PV Station Emergency Response Procedure	Ensures that site personnel are prepared to respond to any incident in a safe, efficient, and effective manner that aligns with Consumers Energy’s company-wide response plans and the Generation ERP.
Work Instructions	Operational Procedures	Procedures are tactical—they are the step-by-step instructions for carrying out the actions required for policy compliance. They typically describe and define how policies will be implemented and by whom. They also spell out who is responsible for review and approval of the procedure. It is required that personnel follow procedure documents when completing the covered instructions. They are not optional, and personnel should not rely on memory alone to complete the steps covered.

	<i>Job Aids</i>	Job aids are more detailed step-by-step instructions that focus on a specific task in a procedure. They are, by definition, reference documents that support some part of a key business process.
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Table 1: CE Emergency Management Planning Framework: Generation Operations Example

Technology

The key components of a utility scale solar site are:

Solar Modules: Solar cells contain a material that conducts electricity only when energy is provided—by sunlight, in this case. This material is called a semiconductor; the “semi” means its electrical conductivity is less than that of a metal but more than an insulator’s. When the semiconductor is exposed to sunlight, it absorbs the light, transferring the energy to negatively charged particles called electrons. The electrons flow through the semiconductor as electrical current, because other layers of the PV cell are designed to extract the current from the semiconductor. Then the current flows through metal contacts—the grid-like lines on a solar cell. To boost energy yield bifacial solar modules, which are double-sided to capture light on both sides of a silicon solar module—they capture light reflected off the ground or roof where the panels are installed. (Source: energy.gov)

Notably, solar modules do not contain, nor do they release liquids or gases.

Trackers: These devices change their orientation throughout the day to follow the sun’s path to maximize energy capture. Single-axis solar trackers rotate on one axis moving back and forth in a single direction. Motors and gear trains direct solar trackers by means of a controller that responds to the sun’s direction and/or adjusts on a chronological basis to counteract the Earth’s rotation by turning in the opposite direction.

Notably, solar trackers are also used to stow or position solar modules into a safe store position in order to mitigate any potential equipment damage in the event of severe weather such as high wind, hail and/or heavy snow.

Wiring and Connectors: Specialized, environmental resist conductors and connector are used to connect solar panels in series to form a string. This arrangement allows the electricity generated by each panel to flow through the entire string, resulting in a cumulative voltage output.

Strings are then connected in enclosed electrical combiner boxes to form an array. By connecting multiple strings of solar panels in parallel, meaning that the positive terminals of all the strings are connected, as are the negative terminals. This provides for an increased current output, thereby enhancing the overall power production of the solar panel system.

Inverters: The inverter converts the direct current (DC) to an alternating current (AC), which flows into the electric grid and, eventually, connects to the circuit that is your home’s electrical system. As long as sunlight continues to reach the module and the circuit is connected, electricity will continue to be generated.

Generation Step Up Transformer: Generator step-up transformers (GSU) are the critical link between the utility scale solar station and the transmission network connecting AC networks of different voltage to each other. GSUs must be built to withstand severe electrical stress from fault currents and transients. generator. Its configuration and overall build are meant to withstand extreme thermal loading without succumbing to early wear and tear. A generator step-up transformer works by converting the generator's low voltage and high current output into a higher voltage and lower current. This is done by windings of wire around a common iron core.

Notably, GSUs are typically filled with an insulating fluid that is also circulated through cooling tubes/fins to dissipate heat. Mineral and synthetic oils are most often used. Spill containment is required for environmental protection/best practices and the fluid is periodically sampled to ensure its purity and efficacy. Polychlorinated Biphenyl (PCBs) oils are no longer used in the United States as of the 1979 Toxic Substance Controls Act.

Substation: In additional to the GSU, substations may contain equipment that helps keep our electricity transmission and distribution systems running as smoothly as possible, without repeated failure or downtime. This includes protection equipment, which detects and clears faults in the network. Generally PV generating stations and substations are unattended, relying on SCADA (supervisory control and data acquisition) for remote supervision and control. Sensors, computers, networked data communications and graphical user interfaces are typically housed in a climate-controlled building called the control house which is connected via specialized fiber

Each of the aforementioned key components will have been supplied by a Consumers Energy Approved Supplier based upon Consumers Energy technical specifications, as well as relevant codes, statues, etc.

optic lines and communications to a remotely located control room that is staffed 24/7.

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Abbreviations and Definitions

1. **AED** – Automated External Defibrillator
2. **CE** – Consumers Energy
3. **CESCC** – Consumers Energy Security Command Center
4. **EMS** – Emergency Medical Services
5. **Emergency Officials** – Responding agencies (EMS, FD, Police, etc.)
6. **ERP** – Emergency Response Plan
7. **Everbridge**- A scalable mass notification system that delivers emergency messaging to individuals and groups.
8. **FD** – Fire Department
9. **ICS** – Incident Command System
10. **MOC** – Merchant Operations Center
11. **PPE** – Personal Protective Equipment
12. **SDS** – Safety Data Sheet
13. **SLUP** – Special Land Use Permit
14. **SPCC** – Spill Prevention Control and Countermeasures plan
15. **Supervisor** – CE authorized representative that has management responsibility of the Solar PV Station site.

General Guidelines for Reporting an Incident

1. **Public/Consumers Employee calls 911**
 - a. 911 receives the call and gathers as much information as possible regarding the incident and the location.
 - b. 911 will notify Consumers Energy’s Security Command Center (CESCC) (800-760-3295) of the reported incident.

- c. CESCC will initiate Everbridge notifications for the applicable affected site.
- 2. **Merchant Operations Center (MOC)** receives a fault via supervisory control and data acquisition (SCADA) indicating possible on-site incident:
 - a. MOC will contact the on-call Renewable Specialist or Solar/Battery Tech to verify there is an actual indication of an incident through SCADA.
 - b. If verified there is a probable indication of an incident, Renewable Specialist or Solar/Battery Tech will contact the MOC and the on-call Supervisor.
 - c. MOC will call CESCC and report the incident and request 911 be called.
 - d. CESCC will call 911 and initiate Everbridge notifications for the applicable affected site.

Evacuation Plan

As needed site personnel will take appropriate steps, such as, establish minimum clearance area (line of sight), etc., to protect individuals and the surrounding environment until first responders arrive to implement containment measures and set the evacuation area(s).

Injury Incident



WARNING

Assess the scene for safety issues before helping the injured person.

- 1. Depending on the type of injury, call **911** (if applicable) and **Security Command Center (800-760-3295)** to initiate the Everbridge notifications.
- 2. **Triage**
 - a. Assess the scene for safety issues before helping the injured person to prevent additional injuries and to ensure no other personnel are put at risk in the process.
 - b. Tend to the injured person per First Aid/CPR Training as soon as it is safe to do so. (i.e., assess the person's overall condition, stop the bleeding, need for eyewash, exposure to gas or chemicals, use AED if needed, etc.).

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NOTE
For **non-emergent** medical attention, the site personnel shall contact the supervisor, and arrange for transport to nearest hospital or clinic. The supervisor may accompany the injured party to the hospital or clinic.

3. **Chemical Exposure**

- a. Review applicable Safety Data Sheet (SDS) documents for instructions on treatment, precautions, etc. Access the SDS Database here: <https://chemmanagement.ehs.com/9/783660e3-72de-4d7d-8ae2-17c77e80232b>
- b. The Renewables Right to Know (RTK) Program Coordinator is listed in each of the site-specific plans. The RTK Program Coordinator is also a resource for emergencies involving exposure to gas/chemicals.
 - See also [535 Right to Know Program](#) for additional information.

4. **Electric Shock**



WARNING
Electric shock from live circuit/system may exist. Do not touch the injured person before all power to the applicable circuit/system has been shut off.

Assume batteries are charged and are potential shock hazards.



NOTE
Refer to the [Corporate Safety Manual](#), **210-3 Electrical Safety/Electrical Emergency Response**, for more information.

If there is suspicion that an injury has occurred from electric shock, the following general emergency procedure must be carried out by CE Personnel:

- a. Call 911 for emergency medical assistance immediately. Any electric shock, no matter the size, requires medical attention.
 - Call Security Command Center (800-760-3295) to initiate the Everbridge notifications.

- Switch off all power per applicable specific Operating Manual.
- Always assume batteries are charged.
- b. Verify all power has been switched off.
 - Lock power in the Off position to prevent other personnel from accidentally switching on the power.
 - After the victim is removed from the power source, administer first aid/CPR as applicable.

Refer to the [Corporate Safety Manual](#), **210-3 Electrical Safety/Electrical Emergency Response**, for more information.

5. Arc Flash

Arc flash hazards exist at all Solar sites. In the event of an arc flash causing injury:

- a. Stop working and move away from electrical source.
- b. Call 911.
- c. Do not touch the injured person until power has been shut off. If power can't be shut off, use non-conductive materials to safely separate the injured person from the source.
- d. If the injured person is on fire, smother the flames.
- e. Perform CPR if needed.
- f. Run cool water over the injured person's burns if possible.
- g. Do not apply ice, cream, or ointment to the burns.
- h. Avoid touching anything that has been exposed to the arc flash until it has cooled down.

Fire Response

In the event of a fire, the individual discovering the emergency shall:

1. Assess the situation to determine potential safety concerns to life and the environment, with life safety as the priority.
2. Notify the appropriate local authorities by dialing 911 and direct them to the entry point identified on Figures 1 and 2.
3. Local authorities should contact the Operator to determine the appropriate response. Upon arrival to the Project, responders shall:
 - a. Evacuate and secure the area and keep people a minimum of 300 feet away, provided there are no immediate threats to people or non-solar property.
 - b. Let the facility burn. Burning electrical equipment is already damaged and must be replaced.
 - c. Protect adjacent exposures, such as homes and forested areas, as needed, to limit the potential of the fire spreading.
 - d. If fire must be suppressed within the array fence line, the Operator will direct local authorities on how to proceed.

The following are the most important considerations when responding to a fire or other emergency at the Solar PV site:

- Solar and substation components are always hot and should always be considered electrically energized. DC voltage is always present, even at night.
- Identify and validate the hazard in order to minimize injury.
- Electrical components produce gas during combustion. All responders should use a self-contained breathing apparatus (SCBA).
- Before committing apparatus to the access roads within any of the fenced panel array enclosures, understand that turn arounds will often be well over 1,000 feet away.
- Under the direction of the Operator, isolate or shutdown the electrical power at the site of the fire, if possible.
- Do not assume the system is de-energized and do not attempt to de-energize any equipment.
- Do not open any inverter doors until at least 48 hours have passed since the initiation of the event or conditions are verified safe and entry is approved by the Operator.
- Leave the scene in a safe condition after mitigating hazards.

Hazardous Waste Spill/Release

1. Spill

- a. If applicable, follow the site Spill Prevention Control and Countermeasures Plan (SPCC).
- b. If applicable call **911** and **Security Command Center (800-760-3295)** to initiate the Everbridge notifications.
- c. Always wear proper PPE when working with any chemical or hazardous spill.
- d. Keep people and animals away from the spill site.
- e. Consult with/engage Environmental Coordinator to determine if an Environment Risk Assessment is required.

2. Spill Containment

- a. Take immediate preventive action that can be performed, without exposing yourself or others to danger, to control the situation and prevent environmental consequences/contamination.
- b. If clay absorbent material is not readily available, use any available absorbent material or sand to

absorb the spill until clay absorbent material is delivered to the location.

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Acts of Terrorism, Sabotage, and Bomb Threats

In the case of an act of terrorism, bomb threat, vandalism, or sabotage, make the following notifications:

- a. Call **911** and **Security Command Center (800-760-3295)** to initiate the Everbridge notifications and request the local/county emergency manager be contacted.
- b. Upon arrival, first responders will assume control of response actions including determining if evacuation of the public is required.
- c. Refer to Site Specific Annexes herein for evacuation guidance to support law enforcement.

Contacts

The name(s) of those responsible for the site and their contact information shall be posted prominently at various locations around the perimeter of the site such that a lay person can readily find such information.

References

The following documents were utilized to help inform this policy. Consult these documents for further applicable information.

Industry

- Operations and Maintenance Best Practices 5.0 – Available at www.solarpowereurope.org
- Best Practices for Operation and Maintenance of Photovoltaic and Energy Storage Systems; 3rd Edition – Available at www.NREL.gov/solar

Internal

- *G-A-125 Generation Operations Emergency Response Procedure*. April 2015. Jackson, MI.
- *CE All Hazards Emergency Operations Plan* [CE Standard Work \(sharepoint.com\)](#)

State

- *Michigan Emergency Management Act, Michigan State Police / Emergency Management and Homeland Security Division*, Publication 102, 2013

Federal

- Comprehensive Preparedness Guide (CPG) 101, Producing Emergency Plans, Federal Emergency Management Agency (FEMA) 2010
- National Incident Management System (NIMS), Department of Homeland Security (DHS), 2008
- Incident Command System, Component 4
- National Infrastructure Protection Plan (NIPP), DHS, 2004
- National Response Framework (NRF), DHS, 2007

Annexes

Gustin Solar PV Station

Community Hospitals

MyMichigan Medical Center Tawas
200 Hemlock Rd, Tawas City, MI 48763

CE Contacts	
Role	Telephone
Site Field Leader	TBD
Operations Consumers Energy	800-477-5050
Distribution Control Center	800-453-4543
Security Command Center	800-760-3295

Local/Regional Contacts		
Name	Agency	Phone/Cell
Fire	Fire Department	911
Police	Police Department	911
HAZMAT	Hazardous Materials Team	911
County Office	Alcona County Emergency Services	(989) 736-8185
Michigan State Police	Michigan State Police, Operations Desk	517-241-8000
Emergency Dispatch	County Dispatch Authority	911
EGLE	Michigan Department of Environment, Great Lakes, and Energy	1-800-662-9278
NRC	National Response Center	800-424-8802
EPA	Environmental Protection Agency (Region 5)	312-886-3000
	Environmental Protection Agency (National Emergency Response Center)	800 424-8802

Gustin Solar Site Layout

